PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 183.39735AP8	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/US05/11304	International filing date *(day/month/year)* 01 April 2005 (01.04.2005)	Priority date *(day/month/year)* 01 April 2004 (01.04.2004)
International Patent Classification (IPC) or national classification and IPC IPC: **A61F 2/66**(2006.01) USPC: 623/49		
Applicant TOWNSEND, BARRY W.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *(sent to the applicant and to the International Bureau)* a total of 4 sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) _____ , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
   - ☒ Box No. I Basis of the report
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
09 November 2005 (09.11.2005)	27 February 2006 (27.02.2006)
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Corrine McDermott Telephone No. (703) 308-0858

Form PCT/IPEA/409 (cover sheet)(April 2005)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US05/11304

Box No. I Basis of the report

1. With regard to the **language**, this report is based on:

☒ the international application in the language in which it was filed.

☐ a translation of the international application into English, which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1(b))

☐ publication of the international application (under Rule 12.4(a))

☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:
pages 1-35 as originally filed/furnished
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____

☒ the claims:
pages 36-42 as originally filed/furnished
pages* 36-39 as amended (together with any statement) under Article 19
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____

☒ the drawings:
pages 1-19 as originally filed/furnished
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing (*specify*): _____
☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing (*specify*): _____
☐ any table(s) related to the sequence listing (*specify*): _____

** If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US05/11304

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims NONE	YES
	Claims 1-46	NO
Inventive Step (IS)	Claims NONE	YES
	Claims 1-46	NO
Industrial Applicability (IA)	Claims 1-46	YES
	Claims NONE	NO

2. Citations and Explanations (Rule 70.7)

Claims 1-12 and 25-46 lack novelty under PCT Article 33(2) as being anticipated by Townsend et al. Townsend et al teaches clearly anticipates the system having identical figures 1-27. Referring to figure 1, element 6, or figure 19, element 48, both elements are interpreted as an ankle and shank which are "formed by a resilient member which extends upward from the foot by way of an anterior facing convexly curved coiled portion".

Claims 13-24 lack novelty under PCT Article 33(2) as being anticipated by Jang et al. Referring to figure 5, Jang et al teaches an upstanding, resilient calf shank 155 and 106, which forms a resilient ankle joint area having an anterior facing convexly curved portion of the calf shank 155 and 106.

Claims 1-46 meet the criteria set out in PCT Article 33(4), and thus meets industrial applicability because the subject matter claimed can be made or used in industry.

---------- NEW CITATIONS ----------

WE CLAIM:

1. A system for a lower extremity prosthesis comprising:

a longitudinally extending foot having a forefoot portion at one end, a hindfoot portion at an opposite end and a midfoot portion extending between said forefoot and hindfoot portions;

an ankle secured to the foot;

an upstanding shank extending upward from the ankle;

wherein the ankle and shank are formed by a resilient member which extends upward from the foot by way of an anterior facing convexly curved coiled portion of the member, and

wherein the member is secured to the foot by way of a coupling element which is monolithically formed with the forefoot portion of the foot.

2. The system according to claim 1, wherein the coupling element extends posteriorly from the forefoot portion as a cantilever over the midfoot portion and part of the hindfoot portion of the foot.

3. The system according to claim 2, wherein the hindfoot portion and the midfoot portion of the foot are monolithically formed and connected to the monolithically formed forefoot portion and coupling element.

4. The system according to claim 1, wherein the lower end of the resilient member is reversely curved.

5. The system according to claim 4, wherein the coupling element houses the reversely curved lower end of the resilient member.

6. The system according to claim 4, wherein the reversely curved lower end of the resilient member is in the form of a spiral to form said coiled portion.

7. The system according to claim 6, wherein a radially inner end of the spiral of the resilient member is fastened to the coupling element.

8. The system according to claim 1, wherein the coupling element includes a stop to limit dorsiflexion of the resilient member.

9. The system according to claim 1, further comprising a cosmetic covering in the shape of a human foot and lower leg, the cosmetic covering being located over the foot, ankle and at least the lower end of the shank with the shank extending upward from the ankle within the lower leg covering.

10. The system according to claim 1, further comprising a posterior calf device on the prosthesis to store energy during force loading of the prosthesis and return the stored energy during force unloading to increase the kinetic power generated for propulsive force by the prosthesis in gait.

11. The system according to claim 10, wherein the device includes at least one elongated member extending between the upper portion of the shank and a lower portion of the prosthesis, and at least one spring which is resiliently biased by the at least one elongated member in response to anterior movement of the upper end of the shank for storing energy.

12. The system according to claim 11, wherein the at least one spring includes a coiled spring with a free end connected to the elongated member, the coiled spring being resiliently expanded in response to anterior movement of the upper end of the shank in gait for storing energy.

13. A prosthetic foot comprising:

a longitudinally extending foot keel having a forefoot portion at one end, a hindfoot portion at an opposite end and a midfoot portion extending between said forefoot and hindfoot portions;

an upstanding, resilient calf shank secured to the foot keel at a lower end of the calf shank which forms a resilient ankle joint area of the prosthetic foot and extending upward from the foot keel by way of an anterior facing convexly curved portion of the resilient calf shank;

wherein the calf shank is secured to the foot keel by way of a coupling element, which is monolithically formed with the forefoot portion of the foot keel.

14. The prosthetic foot according to claim 13, wherein the coupling element extends posteriorly from the forefoot portion as a cantilever over the midfoot portion and part of the hindfoot portion of the foot keel.

15. The prosthetic foot according to claim 14 wherein the hindfoot portion and the midfoot portion of the foot keel are monolithically formed and connected to the monolithically formed forefoot portion and coupling element.

16. The prosthetic foot according to claim 13, wherein the lower end of the calf shank is reversely curved.

17. The prosthetic foot according to claim 16, wherein the coupling element houses the reversely curved lower end of the calf shank.

18. The prosthetic foot according to claim 16, wherein the reversely curved lower end of the calf shank is in the form of a spiral.

19. The prosthetic foot according to claim 18, wherein a radially inner end of the spiral of the calf shank is fastened to the coupling element.

20. The prosthetic foot according to claim 13, wherein the coupling element includes a stop to limit dorsiflexion of the calf shank.

21. The prosthetic foot according to claim 13, further comprising a cosmetic covering in the shape of a human foot and lower leg, the cosmetic covering being located over the foot keel and at least the lower end of the calf shank with the calf shank extending upward from the foot keel within the lower leg covering.

22. The prosthetic foot according to claim 13, further comprising a posterior calf device on the prosthetic foot to store energy during force loading of the prosthetic foot and return the stored energy during force unloading to increase the kinetic power generated for propulsive force by the prosthetic foot in gait.

23. The prosthetic foot according to claim 22, wherein the device includes at least one elongated member extending between the upper portion of the calf shank and a lower portion of the prosthetic foot, and at least one spring which is resiliently biased by the at least one elongated member in response to anterior movement of the upper end of the shank for storing energy.

24. The prosthetic foot according to claim 23, wherein the at least one spring includes a coiled spring with a free end connected to the elongated member, the coiled spring being resiliently expanded in response to anterior movement of the upper end of the shank in gait for storing energy.

25. A system for a lower extremity prosthesis comprising:

a longitudinally extending foot;

an ankle secured to the foot;

an upstanding shank extending upward from the ankle;

wherein the ankle and shank are formed by a resilient member having a reversely curved lower end secured to the foot to form the ankle and extending upward from the foot by way of an anterior facing convexly curved coiled portion of the member, and

wherein the resilient member is secured to the foot by way of a coupling element housing the reversely curved lower end of the member.

26. The system according to claim 25, wherein the reversely curved lower end of the resilient member is in the form of a spiral to form said coiled portion.